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Williams 3767. Pebas, Williams 1882. San Juan, Williams 3735. La Victoria, edge of forest, Williams 2965. Brazil.

49. URTICACEAE. Nettle Family

By E. P. Killip

References: Weddell, Ann. Sci. Nat. III. 18: 197-232. 1852; IV. 1: 173-212. 1854; Arch. Mus. Paris 9. 1856-1857; DC. Prodr. 16, pt. 1: 32-235. 1869; Blume, Mus. Bot. Lugd. Bat. 2: 43-170. 1852-1856; Killip, "Notes on Peruvian Urticaceae of the Marshall Field Exploration," Journ. Wash. Acad. Sci. 15: 48-56. 1925.

Monoecious or dioecious herbs, shrubs, or trees, sometimes armed with stinging hairs and often bearing cystoliths; leaves simple, alternate, with those of the adjacent nodes often unequal, or opposite, with those of a pair often unequal, entire, toothed, or rarely lobed, stipulate; flowers small, greenish or greenish white, in unisexual or androgynous clusters, the perianth 2-5-lobed or parted, or sometimes wanting; fruit an achene.

Leaves opposite, those of a pair often unequal; plants mostly herbaceous.

Plants armed with stinging hairs; perianth of pistillate flowers 4-parted.....1. *Urtica*.

Plants without stinging hairs; perianth of pistillate flowers 3-parted, or tubular and 2-4-dentate.

Stigma short-penicillate; inflorescence paniculate, cymose, or capituliform; plants usually herbaceous.....2. *Pilea*.

Stigma filiform; flowers in sessile clusters in the leaf axils or in spikes; plants woody.....3. *Boehmeria*.

Leaves alternate.

Perianth of pistillate flowers none.

Flowers in axillary glomerules.....4. *Phenax*.

Flowers in long, slender spikes.....5. *Myriocarpa*.

Perianth of pistillate flowers present.

Plants woody.

Stigma sessile, penicillate; plants usually armed with stinging hairs.....6. *Urera*.

Stigma filiform; plants without stinging hairs.

Pistillate perianth strongly nerved; achenes crustaceous, light brown to white; leaves entire (toothed in one Peruvian species), those of the adjacent nodes subequal.

7. *Pouzolzia*.

Pistillate perianth nerveless; leaves toothed, those of the adjacent nodes often very unequal..... 3. *Boehmeria*.
Plants herbaceous.
Leaves toothed; plants armed with stinging hairs; inflorescence paniculate..... 8. *Fleurya*.
Leaves entire; plants unarmed; inflorescence glomerulate.

9. *Parietaria*.

1. URTICA L. Nettle

Annual or perennial herbs armed with stinging hairs; leaves petiolate, toothed or incised; plants monoecious or dioecious, the flowers in androgynous or unisexual clusters, axillary and sessile, or forming elongate spikes or panicles, 4-parted.

Leaves flabellate-incised, the segments lobed..... *U. flabellata*.

Leaves ovate to ovate-lanceolate, or cordate.

Inflorescences unisexual; leaves rufo-hirsutulous beneath.

U. Macbridei.

Inflorescences androgynous; leaves glabrous, or pilose or pilosulous with pale hairs.

Achenes not more than 1 mm. long, very slightly flattened; leaves thick, usually rugose-bullate..... *U. echinata*.

Achenes 1.2-2 mm. long, strongly flattened; leaves thin, flat.

Leaves incised-dentate; flowers in glomerules; plants annual.

U. urens.Leaves coarsely dentate or serrate; flowers in glomerules or elongate spikes; plants perennial..... *U. magellanica*.

Urtica echinata Benth. Pl. Hartw. 252. 1846. *U. andicola* Wedd. Ann. Sci. Nat. III. 18: 198. 1852.

An annual herb up to 40 cm. high, usually densely covered throughout with stinging hairs; stem pilosulous; leaves ovate or ovate-orbicular, 0.5-3 cm. long, coarsely dentate, acute, usually rugose-bullate and pubescent beneath; flowers in sessile, androgynous clusters shorter than the petioles; achenes 0.8-1 mm. long, apiculate, very slightly compressed.

Huánuco: Baños, *Wilkes Expedition*.—Junín: At 4,000 meters, *Mackenzie* in 1924. Arequipa: Nevado de Chachani, 4,200 meters, *Pennell* 19289. Tacna: Volcán Tacora, 4,000-4,500 meters, *Weddell* 4440 (type of *U. andicola*); *Werdermann* 1147. Cuzco: Cordilleras del Pachatusán, 4,400 meters, *Herrera* 2578. Also in Ecuador and Bolivia.

Urtica flabellata HBK. Nov. Gen. & Sp. 2: 40. 1817.

An annual, branched from the base, sparingly bristly on the stem, densely so on the foliage; leaves thick, flabellate-incised, with the segments subtrilobate, rugose-bullate; panicles androgynous, densely flowered, shorter than the petioles; achenes 1.5-2 mm. long, acute, strongly flattened.

Huánuco: Pampas de Bombón, *Ruiz & Pavón*.—Junín: *Raimondi* 1186. Huancayo, 3,400 meters, *Killip & Smith* 22118. Cuzco: Paucartambo Valley, 3,600 meters, *Herrera* 2321. Puno: San Antonio, *Lechler* 1802. Sandía, *Weberbauer* 969. Without locality: *Ruiz & Pavón*; *Gay* 979. Also in southern Colombia, Ecuador, and Bolivia.

Urtica Macbridei Killip, Journ. Wash. Acad. Sci. 15: 49. 1925.

An erect herb, about 1.5 meters high, armed with a few weak bristles; leaves sparse, cordate-ovate, 6-12 cm. long, 4-8 cm. wide, acuminate, crenate, densely hirsutulous on the nerves and veins beneath; plants monoecious, the flower spikes unisexual, the staminate spikes 12-15 cm. long, in the upper axils, the pistillate 3-3.5 cm. long, in the lower axils; achenes 1 mm. long.

Huánuco: Muña, 2,400 meters, 4271 (type).

Urtica magellanica Poir. in Lam. Encycl. Suppl. 4: 223. 1816.

A perennial herb, up to 80 cm. high, the stem glabrous or pubescent, sparingly or sometimes densely armed with bristles; leaves ovate or ovate-lanceolate, 2-7 cm. long, 1.5-5 cm. wide, acuminate, cordate or rounded at the base, coarsely serrate or dentate; flowers in androgynous glomerules or slender spikes, the staminate flowers about 2 mm. wide; achenes 1.2-1.5 mm. long, strongly compressed.

Cajamarca: Cutervo, *Raimondi* 4101. Tambillo, *Raimondi* 4340, 4392, 7053. Lima: Río Blanco, 3,300 meters, *Killip & Smith* 21629. Huánuco: Llata, 2,100 meters, 2268. Junín: La Oroya, *Rose* 18699. Cuzco: Ollantaitambo, 3,000 meters, *Cook & Gilbert* 636, 798, 1204. Cuzco, *Herrera* 533, 679. Puno: Puno, *Soukup* 12. Dept. uncertain: San Damián, 2,400-3,000 meters, *Hrdlicka* in 1913. Without locality: *Gay* 589, 2159. Also in Bolivia, Chile, and Argentina. "Apiquisa," "celula quisa," "quisa," "mula-quisa," "yana-quisa."

These specimens show much variation in the length of the inflorescences, and perhaps more than a single species is represented. *U. ballotaefolia*, a common plant of Colombia, is similar to *U.*

magellanica, and some of the Peruvian material listed above has been referred to it. Other specimens have been cited in literature as *U. bracteata* Steud.

Urtica urens L. Sp. Pl. 984. 1753.

An erect or ascending annual, 15-50 cm. high, with a simple or few-branched stem; leaves crowded, oval, 2-5 cm. long, 0.6-3 cm. wide, rarely larger, rounded or acute at the ends, incised-dentate; panicles androgynous, subsessile, usually shorter than the petioles; achenes 1.5-2 mm. long.

Lima: Matucana, 2,400 meters, 174. Surco, 1,500 meters, Killip & Smith 21534. Rio Blanco, 3,000-3,500 meters, Killip & Smith 21627, 21709. Junin: La Oroya, 3,650 meters, 974. Tarma, 3,100 meters, Killip & Smith 21781. Cuzco: Ollantaitambo, 3,000 meters, Cook & Gilbert 778, 788, 1202. Cuzco, Herrera 305. Without locality: Humboldt & Bonpland; Lechler 1803; Savatier; Gay 2285. Introduced from Europe and widely distributed in the New World. "Quisa," "cohuiquis," "ortiga menor."

2. *PILEA* Lindl.

Reference: Killip, Contr. U. S. Nat. Herb. 26: 367-394. 1936.

Annual or perennial, monoecious or dioecious, usually succulent herbs, sometimes suffrutescent; leaves opposite, entire or toothed, trinerved or triplinerved, occasionally penninerved, those of a pair sometimes unequal and dissimilar; flowers in clusters, rarely solitary, forming dense heads, cymes, panicles, or umbels, which are androgynous or unisexual; staminate flowers 4 (rarely 2-3)-parted, the pistillate normally 3-parted, the segments unequal, the stigma short-penicillate, sessile; achenes compressed.

Leaves all entire, usually less than 1 cm. long.

Leaves faintly 1-nerved.

Cymes sessile or subsessile; leaves, at least the larger one of a pair, obovate or oblong, cuneate.

Cystoliths not elevated, very faint on under surface of the leaves; plant suberect, up to 30 cm. high. *P. microphylla*.

Cystoliths strongly elevated on both surfaces of the leaves; plant lax, the branches 50 cm. or more long. *P. foliosa*.

Cymes pedunculate; leaves nearly globular, appearing orbicular when dry. *P. serpyllacea*.

Leaves trinerved.

Staminate flowers borne singly or in pairs; leaves cordiform; plant prostrate, much branched. *P. nerteroides*.

Staminate flowers in sessile, androgynous heads; plant erect, unbranched. *P. nitida*.

Leaves (at least the larger one of a pair) toothed, sometimes subentire in *P. marginata*.

A. Leaves of a pair dissimilar or very unequal, the larger more than twice as long as the smaller.

Plants with densely pubescent branches and petioles; stipules more than 2 mm. long, subsistent.

Leaves less than 7 mm. long, the cystoliths conspicuous.

P. pulegifolia.

Leaves 1-3 cm. long, the cystoliths faint beneath.

P. ramosissima.

Plants glabrous throughout.

Foliar cystoliths none. *P. Weberbaueri*.

Foliar cystoliths present.

Larger leaves at a node not more than 4 mm. wide.

P. diversifolia.

Larger leaves at a node more than 4 mm. wide.

Leaves appearing to be in fours at the nodes, owing to the presence of a short branchlet bearing a pair of leaves. *P. nutans*.

Leaves otherwise.

Smaller leaf of a pair oblique, subentire; pistillate cymes sessile.

Larger leaves very oblique, more than 7 cm. long, fully 7 times longer than the smaller ones.

P. Bassleriana.

Larger leaves symmetrical or nearly so, less than 7 cm. long, and proportionately shorter.

P. imparifolia.

Smaller leaf symmetrical, toothed; pistillate cymes peduncled.

Cystoliths all punctiform. *P. pichisana*.

Cystoliths linear or fusiform, occasionally punctiform ones intermingled.

Achenes longitudinally costate; larger leaves not more than 3.5 cm. long. *P. costata*.

Achenes, as far as known, ecostate; larger leaves more than 3.5 cm. long.

Larger leaves more than 3.5 cm. wide, more than 5 times longer than the smaller ones.

P. Haenkei.

Larger leaves not more than 3.5 cm. wide, less than 5 times longer than the smaller ones.

P. macrocystolithica.

A. Leaves of a node similar and equal or, if unequal, the larger one not more than twice as long as the smaller.

B. Leaves averaging not more than 2 cm. long, usually massed at the end of the stem or branches; plants slender, usually prostrate or repent, the branches scarcely 10 cm. long.

Cymes androgynous; leaves coarsely crenate-dentate; stem unbranched.....*P. lamioides.*

Cymes usually unisexual; leaves serrulate or crenate-serrulate; stem usually branched.

Pistillate cymes sessile.....*P. Dombeyana.*

Pistillate cymes peduncled.

Stem long-repent and rooting at most of the nodes, the leaves rather evenly spaced out...*P. nummularifolia.*

Stem repent only in the lower part, the leaves massed at the end of the stem and branches.

Stem densely pubescent.....*P. strigosa.*

Stem glabrous.

Cystoliths on lower surface of leaves linear or fusiform.

Leaves broadly ovate or suborbicular, toothed nearly to the base, the cystoliths inconspicuous.....*P. dauciodora.*

Leaves spatulate, rhombic, or suborbicular, toothed only in the upper half, the cystoliths conspicuous.....*P. Fendleri.*

Cystoliths on lower surface of leaves punctiform.

Achenes less than 1 mm. wide; leaves suborbicular or subreniform; plants monoecious...*P. pusilla.*

Achenes more than 1 mm. wide; leaves ovate-lanceolate; plants apparently dioecious.

P. delicatula.

B. Leaves averaging more than 2 cm. long; plants erect, more than 10 cm. high, usually leafy throughout.

C. Plants glabrous throughout.

Leaves coarsely and sharply serrate-dentate; inflorescence androgynous, sessile, much shorter than the petioles; plants annual, with a simple stem.....*P. hyalina.*

Leaves not coarsely and sharply serrate-dentate; inflorescence unisexual, pedunculate.

Staminate flowers in dense, globose heads, these solitary and long-peduncled or forming a once or twice branched cyme.

Plants dioecious; pistillate inflorescences diffuse, longer than the petioles.....*P. minutiflora.*

Plants monoecious; pistillate inflorescences compact, short-peduncled.....*P. Macbridei.*

Staminate flowers in cymes or panicles.

Cystoliths stellate, 3-rayed; leaves subentire or denticulate only toward the apex.....*P. marginata.*

Cystoliths simple; leaves definitely toothed.

Stem verrucose-roughened, woody; leaves averaging less than 3 cm. long.....*P. verrucosa.*

Stem smooth, usually herbaceous; leaves longer.

Leaves sessile or subsessile, sometimes clasping.

P. subamplexicaulis.

Leaves distinctly petioled, never clasping.

Leaves ovate, triplinerved well above the base; inflorescences usually shorter than the petioles.....*P. punctata.*

Leaves trinerved or subtripplinerved near the base; inflorescences longer than the petioles.

Cystoliths of upper surface of leaves more than 0.5 mm. long, coarse, all fusiform; leaves thick-carnose.....*P. suffruticosa.*

Cystoliths of upper surface of leaves shorter and finer, linear, fusiform, or punctiform; leaves usually of a thinner texture.

Achenes minute, about 0.5 mm. long; leaves cordulate.....*P. citriodora.*

Achenes 1-1.5 mm. long; leaves narrowed at the base.

Stipules 3-10 mm. long, persistent.

P. Poeppigiana.

Stipules less than 3 mm. long, soon deciduous. *P. multiflora.*

C. Plants pubescent throughout, or at least with some indument on either the stem, leaves, or inflorescence.

Leaves of nearly equal size at all the nodes, the internodes subequal, the inflorescence not confined to the upper axils.

Plant annual, slender, with a pellucid stem; cymes androgynous; leaves sharply serrate-dentate.

P. hyalina.

Plant perennial, with a coarse stem.

Stem succulent, essentially glabrous. . . *P. cushiensis.*

Stem ligneous or subligneous, densely rufo-hirsute.

Leaves short-acuminate; plants monoecious, the staminate flowers in a dense, globose head.

P. Pavonii.

Leaves caudate-acuminate; plants dioecious, the staminate flowers in panicles. *P. hirsuta.*

Leaves massed at the end of the stem and branches, or a few, much smaller, at the lower nodes; inflorescence mainly in the upper axils.

Staminate inflorescence borne at the rooting, leafless nodes, the perianth lobes about 2 mm. long.

P. submissa.

Staminate inflorescence borne with the pistillate at the upper nodes, or the flowers mixed with the pistillate ones.

Cystoliths on upper surface of leaves all linear or fusiform, not elevated. *P. pubescens.*

Cystoliths on upper surface of leaves punctiform or a few fusiform, elevated.

Leaves acuminate, densely hirsute above.

P. ceratocalyx.

Leaves obtuse or subacute, glabrous above.

P. Spruceana.

Pilea Bassleriana Killip, Contr. U. S. Nat. Herb. 26: 381. 1936.

A coarse, succulent, glabrous herb, up to 50 cm. high, terrestrial or on tree trunks; leaves of a node very unequal and dissimilar, the larger elliptic, ovate-elliptic, or elliptic-lanceolate, 8-15 cm. long, 2.5-7 cm. wide, caudate-acuminate, subsessile or short-petioled, coarsely crenate-serrate, the smaller ones orbicular-reniform, 5-15 mm. long, strongly oblique, sessile; plants monoecious or dioecious; staminate cymes borne along the naked rooting portion of the stem, pedunculate; pistillate cymes sessile in the axils of the leaves.

Loreto: Balsapuerto, 150-300 meters, Killip & Smith 28429, 28467, 28471 (type); Klug 2870. Yurimaguas, Killip & Smith 28993. Pongo de Manseriche, Killip, Smith & Dennis, 29145; Mezia 6355, 6360; Tessmann 4603. Mouth of Río Pastaza (Killip, Smith & Dennis, 29196).

Pilea ceratocalyx Wedd. in DC. Prodr. 16, pt. 1: 148. 1869.

A low herb, densely grayish-hirsute throughout; leaves oblong or elliptic-ovate, 3-7 cm. long, 1-3 cm. wide, acuminate, narrowed at the base, sharply serrate, the cystoliths fusiform and punctiform; plants monoecious, the cymes apparently unisexual, the staminate compact, subsessile, the pistillate pedunculate, much longer than the adjacent petiole.

Huánuco: Cocho, Poeppig 1032.—Without locality: Poeppig 3046 (type). These specimens are variously labeled "Peru" and "Brazil" in herbaria. The general relationship is with the Peruvian species.

Pilea citriodora Wedd. Ann. Sci. Nat. III. 18: 216. 1852. *Urtica limoniodora* Pavón ex Wedd. loc. cit., as synonym. *P. tarmensis* Killip, Journ. Wash. Acad. Sci. 15: 51. 1925.

An erect, glabrous herb up to 60 cm. high, the stem unbranched; leaves ovate-lanceolate, 6-14 cm. long, 2.5-6 cm. wide, obtuse or short-acuminate, cordulate, crenate-serrate, the cystoliths fusiform, linear, and punctiform; plants dioecious, both the staminate and pistillate flowers borne in diffuse, long-peduncled panicles.

Huánuco: Casapí, Poeppig 1260.—Junín: Huacapistana, Province of Tarma, 2,800 meters, 5822 (type of *P. tarmensis*); Weberbauer 1776a. Chanchamayo, Raimondi 2398.—Without locality: Ruiz & Pavón (type).

Pilea costata Killip, Contr. U. S. Nat. Herb. 26: 382. 1936.

A succulent, glabrous herb about 50 cm. high, branched toward the apex; leaves of a node unequal and dissimilar, crenate-serrate

nearly to the base, the cystoliths linear, the larger leaf lance-elliptic, 2.5–3.5 cm. long, 1.2–1.5 cm. wide, acuminate, the smaller one ovate, 1.5–2 cm. long, obtuse or subacute; plants dioecious, the pistillate cymes 3–4 mm. wide, sessile or nearly so; achenes longitudinally costate.

Junin: Eneñas, Pichis Trail, 1,700 meters, Killip & Smith 25638 (type).

***Pilea cushiensis* Killip, sp. nov.**

Herba dioica, caule foliato, infra glabro, ad apicem sparse rufo-hirsutulo; folia elliptico-ovata, crenato-serrata, triplinervia, supra glabra, subtus in costis sparse rufo-hirsutula, cystolithis linearibus, creberrimis; inflorescentiae paniculiformes, in axillis fere omnibus.

A succulent, perennial herb 1–1.5 meters high; stem sparsely rufo-hirsutulous toward the apex, otherwise glabrous; stipules ovate, about 3 mm. long, obtuse, soon deciduous; leaves of a node similar and subequal, elliptic-ovate, 7–15 cm. long, 3.5–6 cm. wide, acuminate, narrowed to a cordulate base, coarsely crenate-serrate, triplinerved (lateral nerves extending to the upper quarter of the blade), the cystoliths linear, dense, faint beneath, the petioles 2–12 cm. long, those at a node often very unequal; plants dioecious, the staminate inflorescences borne in most of the axils, paniculiform, about 3 cm. long (not fully developed), rufo-hirsutulous, the perianth segments suborbicular.

Huánuco: Cuschi, about 1,500 meters, June 19–23, 1923, on forest floor, Macbride 4826 (type, Field Mus. No. 535,863).

In the key to the Andean species of *Pilea* (Contr. U. S. Nat. Herb. 26: 368–376. 1936) this species would be placed at the very end, being differentiated from the Colombian *P. Castronis* by the shape of the leaves and the cystolithic marking, and by having a more diffuse inflorescence.

***Pilea dauciodora* (R. & P.) Wedd. Ann. Sci. Nat. III. 18: 223. 1852. *Urtica dauciodora* R. & P. ex Wedd. loc. cit., as synonym. *P. uncidens* Wedd. op. cit. 224. *P. dauciodora* var. *uncidens* Wedd. in DC. Prodr. 16, pt. 1: 138. 1869.**

A slender plant, often forming mats, glabrous throughout; leaves broadly ovate or orbicular-ovate, averaging 1.5 cm. long and 1 cm. wide, crenate-serrate, densely covered with linear and fusiform cystoliths; plants monoecious or dioecious, the clusters unisexual, though often both kinds borne at the same axils, rarely androgynous, slender-peduncled.

Huánuco: Muña, 2,000 meters, 4117.—Junín: Huacapistana, 1,800–2,700 meters, Killip & Smith 24160, 24408. Acobamba, Raimondi 2800.—Ayacucho: Carrapa, 1,200 meters, Killip & Smith 22439.—Puno: Sandía, Weberbauer 753.—Without locality: "Andes," Ruiz & Pavón (type); Spruce. Also in Central America, Colombia, Venezuela, and Bolivia.

***Pilea delicatula* Killip, Journ. Wash. Acad. Sci. 15: 51. 1925.**

A slender, glabrous herb, up to 10 cm. high; leaves ovate-lanceolate, 1–1.5 cm. long, acute, sharply mucronate-serrate, the cystoliths of the upper surface linear, faint, those of the lower surface punctiform; plants apparently dioecious; pistillate flowers in small, globose, short-peduncled cymes.

Huánuco: Tambo de Vaca, 4,000 meters, 4400 (type).

***Pilea diversifolia* Wedd. Ann. Sci. Nat. III. 18: 212. 1852.**

A lax, much branched, glabrous herb, the stem up to 1.5 meters long; larger leaves of a node narrowly cuneate-oblong, 5–10 mm. long, 1–4 mm. wide, coarsely 3–7-toothed, 1-nerved, the smaller leaves suborbicular, 3–5 mm. wide, entire or few-toothed, faintly triplinerved; cystoliths linear; plants dioecious; pistillate flowers in short-peduncled cymes.

Huánuco: Muña, 2,100 meters, 3984.—Junín: Dos de Mayo, Pichis Trail, 1,800 meters, Killip & Smith 25885.—Ayacucho: Carrapa, 1,500 meters, Killip & Smith 22357.—Without locality: Ruiz & Pavón (type).

***Pilea Dombeyana* Wedd. Ann. Sci. Nat. III. 18: 221. 1852. *P. orbiculata* Killip, Journ. Wash. Acad. Sci. 15: 53. 1925.**

A low, succulent herb; stipules broadly ovate, persistent; leaves borne mostly near the ends of the branches, nearly orbicular, 7–25 mm. wide, short-petiolate, the cystoliths faint, fusiform; plants monoecious or dioecious, the inflorescences unisexual, the staminate flowers sessile in globose clusters in a few-branched panicle, the pistillate in small, densely flowered, sessile cymes.

Huánuco: Chasqui, 3289 (type of *P. orbiculata*).—Dept. uncertain: Between Callcan and Pelechuco, 3,600 meters, Pearce in 1864; "Andes," Dombey (type).—Without locality: MacLean; "Herb. Hooker 2031."

***Pilea Fendleri* Killip, nom. nov. *Urtica dichroa* Poepp. ex Wedd. in DC. Prodr. 16, pt. 1: 61. 1869, as synonym. *P. dauciodora* var.**

crenata Wedd. op. cit. 139, not *P. crenata* Britt. & Wils. *P. dauciodora* var. *pilosula* Wedd. loc. cit. *P. leptophylla* Killip, Contr. U. S. Nat. Herb. 26: 387. 1936, not Urban.

A very slender plant, with the stem repent toward the base, at length ascending and few-several-branched; leaves rotund-spatulate, rhombic-orbicular or nearly orbicular, 5–20 mm. long, subequal at a node, cuneate, crenate or crenate-serrate above the middle, thin, glabrous or sparsely pilosulous with hyaline hairs, the cystoliths linear or fusiform, conspicuous; plants monoecious or dioecious, the heads unisexual or androgynous, peduncled in the upper axils.

Huánuco: Cocho, Poeppig 1552.—Without locality: Poeppig 1383. Also in Venezuela and Colombia.

In a list in the *Prodromus* of species excluded from *Urtica* Weddell gives *U. dichroa* Poepp., an herbarium name apparently, as equaling *Pilea nummularifolia*. He does not, however, cite the name in the synonymy of the latter. Poeppig's No. 1552, in the Vienna herbarium, bears this name in Poeppig's handwriting, though the specimen is clearly not *P. nummularifolia*.

Pilea foliosa Killip, Contr. U. S. Nat. Herb. 26: 377. 1936.

A glabrous, succulent herb with lax branches 50–150 cm. long; leaves of a node unequal and dissimilar, the longer obovate, 5–10 mm. long, entire or obscurely undulate, the smaller subreniform, 1.5–3 mm. wide, entire; cystoliths linear, strongly elevated; plants monoecious, the staminate flowers usually solitary, the pistillate solitary or in small, subsessile clusters.

Junín: Carapata, 3,000 meters, Killip & Smith 24400 (type). Huacapistana, 1,900 meters, Killip & Smith 24281. Chanchamayo Valley, Schunke 498, 678, 992.

Pilea Haenkei Killip, Contr. U. S. Nat. Herb. 26: 384. 1936.

A glabrous herb 25 cm. high or more; leaves of a node similar but very unequal, ovate-lanceolate, acuminate, cordulate, crenate-serrate to the base, triplinerved, densely covered with fusiform and punctiform cystoliths above and fusiform ones beneath, the larger leaves 9–13 cm. long, 3.5–4 cm. wide, petiolate, the smaller ones 1.5–2 cm. long, subsessile; plants dioecious, the staminate cymes sessile or short-peduncled, densely flowered.

Peru, collected in the montaña, but the precise locality unknown, Haenke 1870 (type).

Pilea hirsuta (Pavón) Wedd. Ann. Sci. Nat. III. 18: 220. 1852. *Urtica hirsuta* Pavón ex Wedd. loc. cit., as synonym.

An erect, robust herb, the stem ferruginous-villous; leaves ovate-elliptic, 7–15 cm. long, 3–7 cm. wide, coarsely serrate, rugulose, ferruginous-hirsute on the nerves and veins, the cystoliths fusiform; plants dioecious, the staminate and pistillate inflorescences similar, paniculate, slightly longer than the adjacent petiole.

Peru, without locality, Ruiz (type).

Pilea hyalina Fenzl, Denkschr. Akad. Wiss. Math. Naturw. (Wien) 1: 256. 1850. *Urtica arvensis* Poepp. ex Fenzl, loc. cit., as synonym.

A slender, erect annual, the stem unbranched, pellucid, glabrous; leaves rhombic-elliptic or ovate, 1–6 cm. long, 0.8–4.5 cm. wide, acute, cuneate, coarsely serrate-dentate, thin-membranous, glabrous, or sparsely hyaline-strigillose above, the cystoliths linear, faint; plants monoecious, the inflorescences androgynous, cymose-paniculate, much shorter than the petioles.

Amazonas: Moyobamba, Mathews 1555.—San Martín: San Roque, 1,400 meters, Williams 7149.—Huánuco: Cocho, Poeppig 1539.—Junín: La Merced, 800 meters, Killip & Smith 23593. San Ramón, 1,600 meters, Killip & Smith 24676. Yapas, Pichis Trail, 1,400 meters, Killip & Smith 25580.—Ayacucho: Aina, 750–1,000 meters, Killip & Smith 22746.—Without locality: Mathews 2032; Gay; Ruiz & Pavón. Widely distributed in the American tropics, from Mexico to Chile, Brazil, and Argentina, at elevations up to 1,500 meters.

Pilea imparifolia Wedd. Ann. Sci. Nat. III. 18: 212. 1852. *P. dendrophila* Miq. in Mart. Fl. Bras. 4, pt. 1: 202. 1853.

A decumbent, glabrous herb with numerous suberect branches; larger leaf rhombic-ovate to elliptic-oblong, rarely obovate, 2–6 cm. long, 0.8–2 cm. wide, crenate-serrate above the middle, oblique, sessile or short-petioled, the smaller leaf obovate-orbicular or orbicular-reniform, 0.8–1.5 cm. long, very asymmetrical, subentire; plants dioecious, the cymes sessile or subsessile, few-flowered.

San Martín: Tarapoto, Spruce 4434.—Loreto: Río Itaya, Killip & Smith 29308, 29515, 29572. Mouth of Río Napo, Tessmann 3721. Mouth of Río Santiago, Mezia 6365. Maucallacta, Klug 3950. Between Río Ucayali and Río Huallaga, Huber 1519.—Junín: San Nicolás, Pichis Trail, Killip & Smith 26038. Colombia to northern

Peru, eastward to the Guianas and Amazonian Brazil; at low elevations.

Pilea lamioides Wedd. Ann. Sci. Nat. III. 18: 213. 1852.

An unbranched herb up to 12 cm. high; leaves ovate, 1-2 cm. long, 6-12 mm. wide, coarsely crenate-dentate, obtuse; plants monoecious, the cymes androgynous, borne in the upper axils, the staminate flowers short-pedicelated in sessile clusters, the pistillate sessile in short-peduncled clusters.

Lima: San Gerónimo, 150 meters, 5910. Atocongo, Pennell 14751. Amancaes, Weberbauer 1594.—Without locality: Dombey (type); Pavón.

Pilea Macbridei Killip, Journ. Wash. Acad. Sci. 15: 52. 1925.

A glabrous plant about 1 meter high, the stem slightly woody, much branched; leaves ovate or orbicular-ovate, 3-5 cm. long, 1.5-2.5 cm. wide, acuminate, cordulate, serrate, the cystoliths linear above, punctiform beneath; plants monoecious, the staminate flowers in a subglobose, slender-peduncled head or in glomerules forming a once branched panicle, the pistillate in short-peduncled cymes.

Huánuco: Río Chinchao, 2,800 meters, 5179 (type).—Junín: Carapata, 3,000 meters, Killip & Smith 24457.

Pilea macrocystolithica Killip, Contr. U. S. Nat. Herb. 26: 384. 1936.

A glabrous, unbranched herb about 30 cm. high; leaves of a node dissimilar and unequal, the larger one ovate or ovate-lanceolate, 4-6 cm. long, 2-3 cm. wide, obtuse or obtusely acuminate, short-petiolate, serrulate, the smaller one suborbicular, 1.5-2 cm. wide, subsessile, the cystoliths of the upper surface very numerous, linear, elevated, 0.7-0.8 mm. long, those of the lower surface shorter and obscure; plants apparently dioecious, the staminate cymes subglobose, on very slender peduncles about 2 cm. long.

Peru, collected in the montaña, the precise locality unknown, Haenke 1860 (type).

In the original account of this species a line in the description of the cystoliths was accidentally omitted, so that the reason for the selection of the specific name was not at all apparent.

Pilea marginata (Poepp.) Wedd. Arch. Mus. Paris 9: 238. 1856-57. *Urtica marginata* Poepp. ex Wedd. loc. cit., as synonym.

An erect, glabrous herb 80 cm. or more high; leaves oblong or elliptic-oblong, 10-20 cm. long, 4-8 cm. wide, attenuate-acuminate,

undulate, subentire or denticulate toward the apex, coriaceous, the cystoliths stellate, 3-rayed; plants apparently dioecious, the staminate flowers in small glomerules in a short, narrow panicle.

San Martín: Tarapoto, Ule 6508.—Huánuco: Cochero, Poeppig 3045. Pampayacu, 1,100 meters, 5086.—Junín: San Nicolás, Pichis Trail, 1,100 meters, Killip & Smith 26032.—Dept. uncertain: Río Amazonas, Poeppig 1088 (type), 2088.

Pilea microphylla (L.) Liebm. Dansk. Vid. Selsk. Skrift. V. 2: 296. 1851. *Parietaria microphylla* L. Syst. ed. 10. 1308. 1759. *Pilea muscosa* Lindl. Coll. Bot. pl. 4. 1821.

A glabrous, succulent herb, 4-30 cm. high, variable in size and habit; leaves usually crowded, thick, short-petioled, obtuse or subacute, entire, those of a pair unequal, the larger usually obovate, up to 1 cm. long, the smaller orbicular or obovate-orbicular, up to 3 mm. long, the cystoliths linear, transverse across the blade; plants monoecious, rarely dioecious, the flower clusters androgynous or unisexual, sessile or subsessile.

Amazonas: Chachapoyas, Mathews.—San Martín: Tarapoto, Williams 6071; Spruce 4028; Ule 6657. San Roque, Williams 7233. Río Huallaga, Williams 4082, 6662. Zepelacio, Klug 3719.—Loreto: Iquitos, Killip & Smith 27500. Puerto Meléndez, Tessmann 4742.—Huánuco: Piedra Grande, 1,500 meters, 3690. Cochero, Poeppig in 1830.—Junín: La Merced, 700 meters, Killip & Smith 24073. Río Paucartambo, Killip & Smith 25329.—Without locality: Ruiz & Pavón. Throughout the American tropics. Often cultivated as a border plant or in pots.

Pilea minutiflora Krause, Bot. Jahrb. 37: 529. 1906.

A glabrous herb 30-40 cm. high; leaves ovate-lanceolate or ovate-elliptic, 3-8 cm. long, 1.5-3 cm. wide, acuminate, rounded or cordulate at the base, crenate-serrate, the cystoliths few and faint; plants usually dioecious, the flowers in small clusters, the staminate ones forming a once branched panicle, the pistillate forming subdichotomous cymes up to 7 cm. long.

Junín: Huacapistana, 1,900-2,000 meters, Weberbauer 2027 (type). Huariaca, 2,900 meters, 3126.—Puno: Sandía, Weberbauer 575.

The Indians are said to use this as a remedy for unrequited love.

Pilea multiflora (Poir.) Wedd. Ann. Sci. Nat. III. 18: 218. 1852, in part. *Urtica multiflora* Poir. in Lam. Encycl. Suppl. 4: 223. 1816. *Pilea anomala* Wedd. Ann. Sci. Nat. III. 18: 217. 1852.

An erect, glabrous herb up to 1 meter high, the stem simple or few-branched; leaves oblong-lanceolate to ovate-lanceolate, 4-15 cm. long, 1.5-4 cm. wide, suboblique, long-acuminate, sharply serrulate, the cystoliths linear and punctiform, faint; plants monoecious or dioecious, the inflorescences unisexual, both kinds cymose-paniculate, diffuse.

Huánuco: Pampayacu, 2,100 meters, *Weberbauer 6812*.—Junín: Pichis Trail, about 1,700 meters, *Killip & Smith, 25775, 25801, 25913, 25929*.—Puno: Sandía, *Weberbauer 6521*.—Cuzco: Cerro de Cusilluyoc, *Pennell 14013*.—Without locality: *Jussieu* (type). Also in Bolivia.

Pilea nerteroides Killip, Contr. U. S. Nat. Herb. 26: 377. 1936. *P. cordifolia* Killip, Journ. Wash. Acad. Sci. 15: 50. 1925, not Benth.

A slender, prostrate herb, leafy throughout; stem villosulous; stipules ovate, persistent; leaves cordate, up to 4 mm. long and 5 mm. wide, villosulous, covered with punctiform cystoliths; staminate flowers borne singly or in pairs, the peduncles 3-6 mm. long; pistillate flowers in 4-6-flowered, pedunculate umbels.

Huánuco: Tambo de Vaca, 4,000 meters, *4395* (type).

Pilea nitida Wedd. Ann. Sci. Nat. III. 18: 211. 1852.

A very slender, glabrous plant, up to 10 cm. high; leaves elliptic-ovate, obtuse at both ends, 4-15 mm. long, 2.5-8 mm. wide, entire or rarely subcrenulate, obscurely 3-nerved, bearing linear cystoliths on the upper surface; plants monoecious, the flowers in compact, androgynous heads shorter than the petioles.

Cajamarca: San Pablo, 2,300 meters, *Weberbauer 3872*.—Lima: San Agustín, *Weberbauer 5244*.—Without locality: *Dombey* (or *Ruiz & Pavón*); type).

Pilea nummularifolia (Sw.) Wedd. Ann. Sci. Nat. III. 18: 225. 1852. *Urtica nummularifolia* Sw. Act. Holm. 1787: 63. pl. 1, f. 2. 1787.

A repent or trailing plant, with a slender, villosulous or glabrescent stem; leaves orbicular, 5-12 mm. wide, crenate, strigillose with stiff, hyaline hairs; plants monoecious or dioecious, the inflorescences apparently unisexual, sessile, the staminate subumbellate, the pistillate cymose.

Loreto: Pebas, on the Río Amazonas, *Williams 1917*. Also in Venezuela and the West Indies.

Pilea nutans (Poepp.) Wedd. Arch. Mus. Paris 9: 196. pl. 7, f. 11-13. 1856-57. *Urtica nutans* Poepp. ex Wedd. loc. cit., as synonym. *Pilea Herrerae* Mildbr. ex Herrera, Anal. Univ. Cuzco 1: 147. 1926, name only.

A diffuse, much branched, glabrous herb; leaves appearing in 4's (rarely in 3's) due to the presence at each node of 1 or 2 borne on very short branchlets, serrate or crenate-serrate, triplinerved, the cystoliths linear, the larger leaves of a node rhombic-ovate or rhombic-lanceolate, 8-25 mm. long, 4-15 mm. wide, the smaller ones rhombic or broadly ovate, up to 5 mm. long; plants dioecious, the staminate flowers in small, 8-12-flowered, globose heads.

Huánuco: Cocho, *Poeppig 1565* (type).—Junín: Huacapistana, 1,800 meters, *Killip & Smith 24274*. Dos de Mayo, Pichis Trail, *Killip & Smith 25789*. Porvenir, Pichis Trail, *Killip & Smith 25895*. Pasla, *Raimondi 9290*.—Cuzco: Río Yanamayo, *Pennell 14049*. Urubamba Valley, *Cook & Gilbert 1095*. Cosñipata Valley, *Herrera 6*.—Puno: Ollachca, *Raimondi 9649*.—Without locality: *Dombey*. Also in Bolivia. "Chía-chía," "quiza," "yuncaquiza."

Pilea Pavonii Wedd. Ann. Sci. Nat. III. 18: 219. 1852. *Urtica cymosa* Pavón ex Wedd. loc. cit., as synonym.

An erect herb, 40-60 cm. high, with a stout, quadrangular, rufo-villosulous stem; leaves broadly ovate, 6-10 cm. long, 4-6 cm. wide, short-acuminate, crenate-serrate, subcoriaceous, appressed-pilous above, densely ferruginous-hirsute beneath, the cystoliths fusiform and punctiform beneath; plants monoecious, the staminate inflorescences borne in the upper axils on stout peduncles, globose, compact, the pistillate sessile or subsessile in the middle axils, cymose-paniculate, much shorter than the adjacent petiole.

Huánuco: Muña, 2,000 meters, *4075*.—Without locality: *Parón* (type).

Pilea pichisana Killip, Contr. U. S. Nat. Herb. 26: 383. 1936.

A slender, glabrous, subrepent herb, with lax branches up to 20 cm. long; leaves of a node unequal but similar, ovate-lanceolate, acute or acuminate, petiolate, crenate-serrate nearly to the base, the cystoliths all punctiform, the larger leaf 2-2.8 cm. long, the smaller one 0.5-1.2 cm. long; plants dioecious, the pistillate flowers in subsessile cymes.

Junín: Dos de Mayo, Pichis Trail, 1,800 meters, *Killip & Smith 25876* (type).

Pilea Poeppigiana Wedd. Ann. Sci. Nat. III. 18: 225. 1852.

A glabrous plant, with the stem repent, at length erect, 30–50 cm. high; stipules broadly ovate, persistent; leaves ovate-lanceolate, rarely oblanceolate, up to 15 cm. long and 7 cm. wide, acuminate, cuneate at the base, coarsely crenate-serrate, the petioles up to 7 cm. long, the cystoliths fusiform and punctiform; plants dioecious, the pistillate inflorescence cymose-paniculate, borne in the upper axils, long-peduncled.

San Martín: Tarapoto, *Ule* 6844.—Huánuco: Yanano, 1,800 meters, 3770. Cochero, *Poeppig* 1032, 1539B.—Pichis Trail, 1,800 meters, *Killip & Smith* 25826, 25902.—Department uncertain: "Subandean region," *Poeppig* (type). Also in the Amazon basin of Colombia and Ecuador.

Pilea pubescens Liebm. Dansk. Vid. Selsk. Skrift. V. 2: 302. 1851.

Stem repent, at length erect and usually with several erect or ascending branches, strigillose; leaves massed at the end of the stem or branches, wanting or much reduced below, broadly ovate or elliptic-ovate, up to 7 cm. long and 6 cm. wide, crenate-serrate, sparingly strigillose above with hyaline hairs, or nearly glabrous, hirsutulous beneath on the nerves and veins, the cystoliths linear and fusiform above; plants monoecious or dioecious, the staminate flowers in a sessile cluster at the base of the cymose-paniculate, peduncled pistillate inflorescences, or scattered among the pistillate flowers.

San Martín: San Roque, 1,350–1,500 meters, *Williams* 6957, 7695. Tarapoto, *Spruce* 4455. Widely distributed in the American tropics.

Pilea pulegifolia (Poir.) Wedd. Ann. Sci. Nat. III. 18: 218. 1852. *Urtica pulegifolia* Poir. in Lam. Encycl. Suppl. 4: 224. 1816.

An herb with an elongate stem and numerous densely tomentellous, leafy branches; leaves appearing in 4's due to the presence at each node of a pair borne on a very short branchlet, ovate, 3–6 mm. long, 2–4 mm. wide (those of a node similar but slightly unequal), obtuse, crenate-serrulate, the petioles tomentellous, the cystoliths linear, conspicuous; plants dioecious, the staminate flowers in small, pedunculate cymes in the upper axils.

Peru: Churugallana, *Dombey* (type).

Pilea punctata (HBK.) Wedd. Ann. Sci. Nat. III. 18: 222. 1852. *Urtica punctata* HBK. Nov. Gen. & Sp. 2: 38. 1817.

An erect or ascending, glabrous herb, 20–40 cm. high; leaves ovate, 3–8 cm. long, 1.5–3 cm. wide, acuminate, rounded at the base, coarsely crenate-serrate, triplinerved well above the base, black-punctate beneath, the cystoliths fusiform; plants monoecious or dioecious, the inflorescences androgynous or unisexual, cymose, longer than the adjacent petioles.

Cajamarca: Zaulaca, *Humboldt & Bonpland* (type).—Amazonas: Chachapoyas, 1,600 meters, *Weberbauer* 4307.—Without locality: *Ruiz & Pavón*.

Pilea pusilla Krause, Bot. Jahrb. 37: 530. 1906.

A slender herb up to 10 cm. high, the stem filiform; leaves sub-orbicular or subreniform, up to 1 cm. long and 1.5 cm. wide, obtuse, subtruncate at the base, sharply serrulate, the cystoliths all punctiform; plants monoecious, the flower clusters forming slender-peduncled panicles.

Junín: Palca, 1,900–2,000 meters, *Weberbauer* 2023 (type).

Pilea ramosissima Killip, Contr. U. S. Nat. Herb. 26: 380. 1936.

A diffuse herb, the stem slightly woody, with numerous lateral, pubescent branches; leaves appearing in 4's, unequal and slightly dissimilar, crenate-serrate, essentially glabrous except for the pubescent petioles, the larger leaves rhombic-ovate, 1–3 cm. long, 7–15 mm. wide, obtuse, the smaller ones orbicular or ovate-orbicular, 4–5 mm. long, the cystoliths faint on the under surface; plants dioecious, the pistillate flowers in small, 10-flowered, compact cymes, their peduncles 1–1.3 cm. long.

Huánuco: Chaglla, 2,800 meters, 3650 (type).

Pilea serpyllacea (HBK.) Wedd. Ann. Sci. Nat. III. 18: 205. 1852. *Urtica serpyllacea* HBK. Nov. Gen. & Sp. 2: 37. 1817. *U. thymifolia* HBK. loc. cit. *Pilea globosa* Wedd. Ann. Sci. Nat. III. 18: 208. 1852. *P. thymifolia* Blume, Mus. Bot. Lugd. Bat. 2: 44. 1855.

A glabrous, very succulent herb, red-tinged throughout; leaves nearly globular, 1–5 mm. in diameter, entire or shallowly crenate, transversely striate with linear cystoliths; plants monoecious, or the staminate flowers sometimes wholly wanting, the pistillate flowers in peduncled cymes.

Cajamarca: Hualgayoc, *Weberbauer* 4054; *Raimondi* 2209. Callacate, *Raimondi* 5639.—Huánuco: Huacachi, 2,000 meters,

3868, 4087. Huánuco, 2,200 meters, 3512; Pearce 118. Casapi, Poeppig 1381.—Lima: Matucana, 2,500 meters, 447. Río Blanco, 3,200 meters, Killip & Smith 21601.—Junín: Carpapata, 2,400 meters, Killip & Smith 24334. Tambo de Viso, Weberbauer 158.—Cuzco: Cuzco, Herrera 51; Weberbauer 4892. Urubamba Valley, 1,800 meters, Cook & Gilbert 262, 1035; Herrera 2288. Apurímac Valley, Herrera 3065. Ollantaitambo, Pennell 13657.—Without locality: Rui: & Parón (type); Jussieu. Western Venezuela to Peru and Bolivia, 2,000–3,500 meters altitude. "Accoicarpa," "quisa," "kkuru-quisa."

Pilea Spruceana Wedd. in DC. Prodr. 16, pt. 1: 161. 1869.

A low herb, the stem repent, at length erect, sparsely villous; leaves oblong or ovate-oblong, 2–8 cm. long, 1.5–4 cm. wide, obtuse or subacute, crenate-serrate, sparingly ciliate, strigillose above, villous beneath, the cystoliths punctiform and fusiform, the latter more numerous at the margin; plants monoecious or dioecious, the pistillate flowers in short-peduncled cymes, the staminate flowers subsessile at the base of the pistillate inflorescence.

San Martín: Tarapoto, Spruce 4376 (type).—Loreto: Cumbasa, Ule 6843.—Huánuco: Posuso, Pearce 284. Also in Bolivia.

Pilea strigosa Wedd. Ann. Sci. Nat. III. 18: 225. 1852. *P. repens* var. *strigosa* Wedd. in DC. Prodr. 16, pt. 1: 156. 1869.

A low herb, the stem ferruginous-hirsute, repent at the base, with lax branches; leaves suborbicular to broadly ovate, 8–25 mm. long, rounded or subacute at the apex, crenate-serrate, strigose above, ferruginous-hirsutulous on the nerves beneath; plants usually monoecious, the cymes unisexual, pedunculate, the staminate subglobose, the pistillate paniculiform.

Loreto: Santa Rosa, 135 meters, Killip & Smith 28835, 28848.—Huánuco: Cocho, Poeppig 1552 in part.—Junín: Dos de Mayo, Pichis Trail, Killip & Smith 25795.—Without locality: Mathews 2031 (type). Also in Bolivia.

Pilea subamplexicaulis Killip, Contr. U. S. Nat. Herb. 26: 390. 1936.

A glabrous plant 35 cm. high or more; leaves lanceolate or oblong-lanceolate, 7–20 cm. long, 2.5–6 cm. wide, acuminate or attenuate-acuminate, cordate or slightly clasping at the base, with numerous fusiform and fewer punctiform cystoliths; plants dioecious; stami-

nate flowers in loose cymes up to 2 cm. long, the pistillate in short, sessile cymes.

San Martín: Tarapoto, 1,100 meters, Ule 6588 (type). San Roque, 1,350–1,500 meters, Williams 7425.

Pilea submissa Wedd. in DC. Prodr. 16, pt. 1: 151. 1869.

Plant terrestrial, or repent on tree trunks, the erect or ascending portion of the stem less than 10 cm. long, pubescent; leaves rhombic-elliptic, 4–9 cm. long, 1.5–3.5 cm. wide (extremes up to 15 cm. long and 5 cm. wide), narrowed at both ends, short-petioled, crenate-serrulate, glabrous above, hispidulous on the nerves and veins beneath, the cystoliths fusiform, faint; plants monoecious or dioecious, the cymes unisexual, the staminate borne at the rooting, leafless nodes, their peduncles 4–8 cm. long, the pistillate at the upper axils, their peduncles 2.5–3 cm. long.

San Martín: Tarapoto, Spruce 4155 (type).—Loreto: Pongo de Manseriche, 250 meters, Mexia 6359. Pumuyacu, Klug 3186.—Junín: San Nicolás, Pichis Trail, 1,100 meters, Killip & Smith 26023.

Pilea suffruticosa Krause, Bot. Jahrb. 37: 529. 1906.

An erect, glabrous, suffrutescent plant, about 2 meters high, the stem unbranched; leaves narrowly elliptic to ovate-elliptic, 5–8 cm. long, 2–3 cm. wide, acute, serrulate, the cystoliths fusiform, prominent; plants apparently dioecious, the staminate inflorescences cymose-paniculate, much longer than the adjacent petiole.

Amazonas: Chachapoyas, 2,500 meters, Weberbauer 4387 (type).

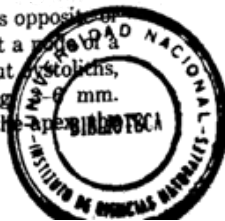
Pilea verrucosa Killip, Journ. Wash. Acad. Sci. 15: 53. 1925.

A few-branched, glabrous shrub, about 1 meter high, the stem verrucose-roughened; leaves ovate or subrhombic, 2–3.5 cm. long, 1–2.5 cm. wide, acute, crenate-serrate, the cystoliths punctiform; plants monoecious, the inflorescences unisexual, the staminate flowers in much branched panicles in the upper axils, the pistillate in subsessile cymes in the lower axils.

Huánuco: Río Chinchao, 2,800 meters, 5201 (type).

Pilea Weberbaueri Killip, Contr. U. S. Nat. Herb. 26: 380. 1936.

A branched, glabrous herb, up to 30 cm. high; leaves opposite, sometimes appearing in 3's or 4's due to the presence at a node of a pair of leaves on very short secondary branches, without cystoliths, the larger leaves oblong-oblancheolate, 7–12 mm. long, 3–6 mm. wide, obtusely acuminate, petiolate, 3–5-toothed near the apex.



smaller ones orbicular-reniform, 3–5 mm. long, 4–6 mm. wide, sessile or subsessile; plants apparently dioecious, the pistillate flowers in dense clusters in a compact cyme, the peduncles filiform.

Junín: Between Palca and Huacapistana, 1,900–2,000 meters, Weberbauer 2022 (type).

Species doubtfully occurring in Peru

Pilea angustata Killip, Contr. U. S. Nat. Herb. 26: 378. 1936. This is based upon a Grisar collection in the Paris Herbarium, said to have come from Ecuador or Peru. In view of other specimens in this collection, it is probable that most, if not all, came from Ecuador.

3. BOEHMERIA Jacq.

Trees, shrubs, or perennial herbs, unarmed; leaves opposite or alternate, toothed, 3-nerved, those of the adjacent nodes sometimes unequal and dissimilar; plants monoecious or dioecious, the flowers in globose, usually unisexual clusters in the leaf axils or forming a spike; staminate flowers 4 (rarely 3 or 5)-parted; pistillate flowers tubular, contracted at the throat, 2–4-toothed or entire, the stigma filiform; achene enclosed in the persistent perianth.

Flower clusters forming long spikes. Leaves opposite. . . *B. caudata*.
Flower clusters in the leaf axils.

Leaves opposite. *B. Mathewsii*.

Leaves alternate.

Under surface of leaves appressed-silvery-sericeous. . . *B. Pavonii*.

Under surface of leaves not sericeous.

Leaves coriaceous, strongly bullate, the larger usually narrowly lanceolate. *B. aspera*.

Leaves membranous, flat or slightly rugulose, the larger ovate-lanceolate or oblong-lanceolate.

Styles about 1 mm. long; leaves of the adjacent nodes similar and subequal. *B. brevirostris*.

Styles 1.5–2 mm. long; leaves of the adjacent nodes very dissimilar and unequal.

Leaves coarsely crenate-serrate, pale and pilosulous beneath. *B. fallax*.

Leaves closely serrulate, concolorous, appressed-hispidulous beneath. *B. anomala*.

Boehmeria anomala (Wedd.) Killip, sp. nov. *B. Pavonii* var. *anomala* Wedd. in DC. Prodr. 16, pt. 1: 199. 1869.

A slender, open shrub, or a tree, about 4 meters high, the branches flexuose, appressed-hirsutulous; leaves alternate, those of the adjacent nodes very unequal and dissimilar, the larger ovate-lanceolate or oblong-lanceolate, 6–15 cm. long, 1.5–6 cm. wide, attenuate-acuminate, often strongly oblique, closely serrulate, short-petioled, membranous, appressed-hispidulous on both surfaces, concolorous, the smaller leaves (rarely present in herbarium specimens) ovate or suborbicular, 3–5 mm. long, 3 mm. wide, sessile; plants apparently dioecious, the flower clusters about 5 mm. wide.

San Martín: Tarapoto, Spruce 3962 (type).—Junín: La Merced, 600 meters, 5268.—Ayacucho: Choimacota Valley, 1,400 meters, Weberbauer 7529.

This is more closely related to *B. fallax* than to *B. Pavonii*.

Boehmeria aspera Wedd. Arch. Mus. Paris 9: 349. pl. 11, f. 24–28. 1856–57. *B. diversifolia* Wedd. Ann. Sci. Nat. IV. 1: 202. 1854, not Miquel, 1851. *B. Pavonii* var. *diversifolia* Wedd. in DC. Prodr. 16, pt. 1: 199. 1869, in part.

A shrub 1–3 meters high, densely leafy throughout, the branchlets grayish- or blackish-hirsute; leaves alternate, those of the adjacent nodes very unequal and somewhat dissimilar, the larger lanceolate, usually narrowly so, 4–13 cm. long, 1–4 cm. wide, long-acuminate, crenate-serrate, short-petioled, coriaceous, strongly bullate, smooth or hispid above, densely cano-hirsute beneath, the smaller leaves ovate, 1–3 cm. long, 0.8–1.5 cm. wide, acute, subsessile; plants monoecious, the flower clusters up to 8 mm. wide, predominately pistillate, sometimes with a few staminate flowers intermingled.

Huánuco: Piedra Grande, 1,500 meters, 3698. Muña, Pearce 120.—Junín: Palca, Dombey (type of *B. diversifolia* Wedd.). Huacapistana, 1,800–2,400 meters, Killip & Smith 24109, 24352; Weberbauer 1994.—Ayacucho: Carrapa, 1,500 meters, Killip & Smith 22324.—Without locality: Ruiz & Pavón. Also in Colombia.

Boehmeria brevirostris Wedd. Ann. Sci. Nat. IV. 1: 201. 1854.

A shrub about 3 meters high, the branchlets cano-hirsute; leaves of the adjacent nodes similar and subequal, ovate or broadly ovate-lanceolate, 3–15 cm. long, 2–7 cm. wide, attenuate-acuminate, usually cordate, coarsely crenate-serrate, membranous, flat, appressed-hispid above, softly pubescent beneath; plants monoecious

or dioecious, the flower clusters 4-6 mm. wide, unisexual or with a few staminate flowers in the pistillate heads; styles about 1 mm. long.

Junín: Río Perené, near Colonia Perené, 600 meters, Killip & Smith 25168. Without locality: Mathews 2039 in part (type).

Boehmeria caudata Sw. Prodr. 34. 1788. *B. peruviana* Blume, Mus. Bot. Lugd. Bat. 2: 224. 1856.

A shrub or a small tree, up to 8 meters high; leaves opposite, large, broadly ovate to elliptic, up to 25 cm. long and 10 cm. wide, acute or acuminate, finely serrate to crenate-serrate, membranous, flat or rugulose, hispid above, sparingly to densely pubescent beneath; plants dioecious, the flowers in dense clusters forming elongate spikes; fruiting perianth at length broadly obovate, compressed.

Junín: Alcotanga, Raimondi 9199. Ayacucho: Carrapa, Killip & Smith 22338. Cuzco: Urubamba Valley, Cook & Gilbert 886. Santa Ana, Cook & Gilbert 1644. Cedrobamba, Herrera 2008. Machupicchu, Herrera 3214, 3216, 3244, 3245. Puno: Sandía, Weberbauer 649. Without locality: Gay 636. Widely distributed in tropical America. "Quisa-quisa" (Cuzco).

Boehmeria fallax Wedd. Arch. Mus. Paris 9: 346. 1856-57. *B. fallax* var. *cordata* Wedd. in DC. Prodr. 16, pt. 1: 198. 1869.

A much branched shrub 2-5 meters high, with slender, hirsutulous or puberulent branches; leaves alternate, those of the adjacent nodes very unequal and dissimilar, the larger ovate-lanceolate or oblong-lanceolate, 2-15 cm. long 1-6 cm. wide, long-acuminate, short-petioled, coarsely crenate-serrate, membranous, flat or slightly rugulose, scaberulous and more or less hispidulous above, pilosulous and pale beneath, the smaller leaves suborbicular-reniform, about 5 mm. wide, few-toothed, sessile, soon deciduous; plants monoecious or rarely dioecious, the flower clusters androgynous or unisexual, up to 5 mm. wide.

Huánuco: Casapí, Mathews 2036 (type). Junín: La Merced, 700 meters, Killip & Smith 23662, 23712. Between San Nicolás and Azupizú, Pichis Trail, Killip & Smith 26113. Ayacucho: Carrapa, 1,500 meters, Killip & Smith 22954. Aina, 1,000 meters, Killip & Smith 22765. Estrella, 500 meters, Killip & Smith 23087. Cuzco: Urubamba Valley, 1,800 meters, Cook & Gilbert 1118. Without locality: Pavón (type of *B. fallax* var. *cordata*); Poeppig 1623; Mathews 2037. Also in Bolivia.

Boehmeria Mathewsii Killip, nom. nov. *Boehmeria hirta* Wedd. Ann. Sci. Nat. IV. 1: 202. 1854, not Swartz, 1788. *B. Weddelliana* Killip, Journ. Wash. Acad. Sci. 15: 55. 1925, not Vidal, 1886.

A compact shrub 1.5-2 meters high, the branches densely hirsute; leaves opposite, broadly ovate, 6-10 cm. long, 3-6 cm. wide (extremes up to 21 cm. long and 13 cm. wide), acuminate, rounded at the base, crenate-serrate, membranous, rugulose, hispid above, cano-tomentose beneath, becoming glabrescent; plants apparently dioecious, the flower clusters axillary, 8-10 mm. wide, the perianth of the pistillate flowers about 2 mm. long.

Huánuco: Muña, 2,200 meters, 4012. Without locality: Mathews 2039 in part (type of *B. hirta* Wedd.).

Boehmeria Pavonii Wedd. Ann. Sci. Nat. IV. 1: 202. 1854. *Procris longifolia* Pavón ex Wedd. loc. cit., as synonym. *Boehmeria Pavonii* var. *diversifolia* Wedd. in DC. Prodr. 16, pt. 1: 199. 1869, in part. *Phenax pallidus* Rusby, Mem. Torrey Club 4: 259. 1895. *B. pallida* Killip, Journ. Wash. Acad. Sci. 21: 347. 1931, excluding synonym "*B. diversifolia* Wedd."

A shrub or a tree, 2-6 meters high, the branchlets nearly straight, finely appressed-pubescent; leaves alternate, those of the adjacent nodes similar but usually very unequal, oblong-lanceolate or elliptic-lanceolate, serrulate or crenate-serrulate, strongly trinerved, distinctly petioled, subcoriaceous, flat or slightly rugulose, appressed-hispidulous above, pale and closely appressed-short-silvery-sericeous beneath, the hairs pointing toward the middle of the areoles, the larger leaves 4-16 cm. long, 1.5-4.5 cm. wide, attenuate-acuminate, the smaller ones 1-3 cm. long, 0.5-1.5 cm. wide, sessile or short-petioled; plants dioecious, rarely monoecious, the flower clusters 6-8 mm. wide, unisexual, rarely androgynous.

San Martín: Tarapoto, Spruce 4029, 4951; Williams 5772. Zepelacio, 1,200-1,600 meters, Klug 3572. Alto Río Huallaga, Williams 6314, 6781. Loreto: Balsapuerto, 220 meters, Klug 2915. Junín: La Merced, 700 meters, Killip & Smith 23442. Ayacucho: Aina, 800 meters, Killip & Smith 23125. Without locality: Ruiz & Pavón (type). Also in Bolivia. "Ishanga."

There has been much confusion regarding this species and *B. diversifolia* Wedd., due to Weddell's varying interpretations in his three surveys of the genus, and to the misidentification of historic collections of *Boehmeria* in several European herbaria. Many of the specimens cited above were distributed as *B. pallida*.

4. PHENAX Wedd.

Unarmed shrubs or suffrutescent herbs; leaves alternate, toothed, rarely entire, 3-5-nerved; plants monoecious or dioecious, the flowers in dense, sessile, axillary clusters, the staminate usually 4-lobed, the pistillate without a perianth, subtended by several bractlets, the stigma elongate-filiform, persistent.

Plants dioecious; leaves usually narrowly lanceolate, attenuate-acuminate..... *P. angustifolius*.

Plants monoecious; leaves ovate or ovate-elliptic (lanceolate in one species), acute, acuminate, or obtuse.

Leaves entire or with 1 or 2 coarse teeth.

Inflorescence densely flowered; leaves lanceolate, 1-2 cm. long, quintuplinerved..... *P. integrifolius*.

Inflorescence loosely flowered; leaves ovate or ovate-lanceolate, less than 1 cm. long, trinerved..... *P. Weddellianus*.

Leaves with several teeth.

Flower clusters unisexual, loosely flowered; leaves coarsely and unequally crenate..... *P. laxiflorus*.

Flowers clusters androgynous; leaves serrate or crenate-serrate.

Leaves essentially glabrous, usually drying light green.

P. laevigatus.

Leaves pubescent, at least beneath, drying darker.

Stem slender, deeply angled, pilosulous; leaves membranous; staminate and pistillate flowers subequal in number to a cluster..... *P. hirtus*.

Stem stout, subangular, hirsute; leaves coriaceous or subcoriaceous; staminate and pistillate flowers often very unequal in number to a cluster..... *P. rugosus*.

Phenax angustifolius (HBK.) Wedd. Ann. Sci. Nat. IV. 1: 193. 1854. *Boehmeria angustifolia* HBK. Nov. Gen. & Sp. 2: 34. 1817. *Procris longifolia* Poepp. ex Wedd. loc. cit., as synonym. *Phenax Ulei* Krause, Verh. Bot. Ver. Brandenb. 48: 151. 1906.

A slender shrub or suffrutescent herb, up to 3 meters high, with several branches; leaves linear-lanceolate or lanceolate, 5-15 cm. long, 0.5-5 cm. wide, gradually attenuate-acuminate, minutely serrulate, glabrous above, sparingly strigillose on the nerves and veins beneath, the nerves impressed above; plants dioecious; achenes minute, granular, the style 4-5 mm. long.

Loreto: *Raimondi* 2203. Iquitos, Killip & Smith 27446. Near Pongo de Manseriche, 100-200 meters, Killip, Smith & Dennis 29146; *Mexia* 6323. Cerro de Escalera (Escalera), 1,200 meters, *Ule* 6842 (type of *P. Ulei*).—Junín: Colonia Perené, 700 meters, Killip & Smith 24911, 25336. La Merced, Killip & Smith 23568. —Aya-cucho: Aina, Killip & Smith 22513.—Without locality: Poeppig 1315. Costa Rica to Colombia, Bolivia, and Brazil.

Phenax Ulei appears to be merely a variant with proportionately broader leaves.

Phenax hirtus (Sw.) Wedd. in DC. Prodr. 16, pt. 1: 235². 1869. *Boehmeria hirta* Sw. Prodr. 34. 1788. *P. urticaefolius* Wedd. Ann. Sci. Nat. IV. 1: 192. 1854, in part. *P. petiolaris* Wedd. loc. cit.

A shrub or suffrutescent herb, 0.5-2.5 meters high, the stem and branches slender, deeply angled, pilosulous; leaves ovate or rarely ovate-lanceolate, 3-12 cm. long, 1.5-7 cm. wide, acute or acuminate, dentate-serrate, thin, flat or slightly rugulose, sparingly hispid above, hirtellous on the nerves beneath; plants monoecious, the glomerules androgynous with the staminate and pistillate flowers nearly equal in number; achenes verruculose.

San Martín: San Roque, 1,400 meters, Williams 7161.—Cajamarca: Cajamarca, *Raimondi* 1765. Hualgayoc, *Raimondi* 4176. Chorrillos, *Raimondi* 7204. Tambillo, *Raimondi* 4630, 6039. Callacate, *Raimondi* 4227.—Junín: Alcotanga, *Raimondi* 9198.—Aya-cucho: Carrapa, 1,200 meters, Killip & Smith 22436. Aina, Killip & Smith 23176.—Without locality: Ruiz & Pavón. This species is widely distributed in tropical America. Some of the specimens cited above have proportionately longer leaves than in typical Jamaican material, and may represent a variety.

Phenax hirtus var. *minor* Wedd. in DC. Prodr. 16, pt. 1: 235². 1869. *P. urticaefolius* var. *minor* Wedd. Arch. Mus. Paris 9: 496. 1856-57.

Leaves 0.8-3 cm. long, 0.5-2 cm. wide; flower clusters usually smaller than in the typical form.

Loreto: Near Yurimaguas, 135 meters, Killip & Smith 27863, 28849.—Cajamarca: Chorrillos, *Raimondi* 7760.—Lima: Matucana, 233, 2883. Obrajillo, Wilkes Expedition. Lima, *Raimondi* 12894.

Phenax integrifolius Wedd. Ann. Sci. Nat. IV. Bot. 1: 193. 1854. Plant suffrutescent, the stem repent, at length procumbent or ascending, diffusely branched, villous; leaves crowded, lanceolate,

1-2 cm. long, 3-8 mm. wide, entire, quintuplinerved, pilose; plants monoecious, the glomerules densely flowered, androgynous; achenes minutely granular.

Type a Peruvian plant collected by Pavón.

Phenax laevigatus Wedd. Ann. Sci. Nat. IV. 1: 192. 1854; Arch. Mus. Paris 9: 497. pl. 16A. 1856-57.

A shrub 1-2.5 meters high, with spreading branches, the younger ones pilosulous; leaves ovate, 3-9 cm. long, 1.5-4 cm. wide, acute or acuminate, coarsely crenate-serrate or serrate, coriaceous, essentially glabrous, sublustrous; plants monoecious, the glomerules androgynous, 5-8 mm. in diameter.

Amazonas: Chachapoyas, Mathews 1556. -Huánuco: Mito, 2,700 meters, 1503. Huacachi, 2,000 meters, 4153. Pillao, Ruiz & Pavón. -Junín: Huasa-huasi, Dombey (type). Huacapistana, Killip & Smith 24099. Palca, Weberbauer 1775. -Lima: Above Lima, Raimondi 12548. -Ayacucho: Carrapa, 2,200 meters, Killip & Smith 22312. -Cuzco: Valle del Apurímac, Herrera. Also in Ecuador and Bolivia.

Phenax laxiflorus Wedd. Arch. Mus. Paris 9: 499. 1856-57.

Plant suffrutescent, the branches slender, puberulent; leaves ovate or elliptic, 1.5-4 cm. long, 1-2 cm. wide, obtuse, coarsely and unequally crenate with 2-4 crenations to a side, pilosulous above, finely pubescent beneath; plants monoecious, the glomerules loosely flowered, unisexual, the staminate in the lower axils, the pistillate in the upper.

Huánuco: Pillao, Ruiz & Pavón (type). Muña, 2,500 meters, 4282, referred here doubtfully.

Phenax rugosus (Poir.) Wedd. in DC. Prodr. 16, pt. 1: 235*. 1869. *Procris rugosa* Poir. in Lam. Encycl. 5: 628. 1804. *Boehmeria ballotaefolia* HBK. Nov. Gen. & Sp. 2: 35. 1817. *Phenax ballotaefolius* Wedd. Ann. Sci. Nat. IV. 1: 192. 1854.

A shrub 2-3.5 meters high, the stem stout, subangular, densely hirsute; leaves ovate, 4-12 cm. long, 2.5-7 cm. wide, crenate-serrate, coriaceous or subcoriaceous, rugose, usually villous-tomentose beneath; plants monoecious, the glomerules very dense, the staminate and pistillate flowers often very unequal in number in a glomerule; achenes verruculose.

Huánuco: Muña, Pearce 158. -Junín: Carpapata, 3,000 meters, Killip & Smith 24420. Cuzco: Ollantaitambo, 3,000 meters, Cook

& Gilbert 588. Urubamba Valley, Herrera 2248. Vilcanota Valley, Herrera 1077. Dept. uncertain: Panahuanca, Mathews 931. Without locality: Jussieu (type); Mathews 2034; Gay 360, 1661. Mexico to Venezuela and Bolivia. "Monte-peseta" (Cuzco).

Phenax rugosus var. *minor* Wedd. in DC. Prodr. 16, pt. 1: 235*. 1869.

Leaves elliptic-ovate, 1.5-2 cm. long, 0.8-1 cm. wide, subsessile, serrate, thick-coriaceous, bullate, lustrous, glabrous above, tomentellous beneath.

Junín: Tarma, Mathews 669 (type).

Phenax Weddellianus Killip, Journ. Wash. Acad. Sci. 24: 43. 1934.

Plant suffrutescent, with a slender, glabrescent stem, diffusely branched; leaves ovate or ovate-lanceolate, 5-18 mm. long, 3-8 mm. wide, entire or with 1-2 coarse teeth on either side, trinerved, sparingly strigillose above, pilosulous beneath; plants monoecious, the clusters loosely flowered, androgynous or rarely unisexual; achenes narrowly ovoid.

Cuzco: Gay (type).

5. MYRIOCARPA Benth.

Unarmed trees or shrubs; leaves alternate, petiolate, toothed or rarely subentire, trinerved, bearing cystoliths; plants dioecious, rarely monoecious; staminate flowers in glomerules forming slender, dichotomous spikes, the perianth 4-parted; pistillate flowers in slender, elongate, dichotomous, sub-unilateral spikes, rarely in panicles, without a perianth, the achenes compressed, stipitate or sessile, often setose at the margin, the stigma lateral, semilunate.

Leaves ovate to ovate-oblong, conspicuously toothed nearly to the base, membranous, the cystoliths of the upper surface conspicuous *M. stipitata*.
Leaves prevailing obovate, undulate-serrulate in the upper half, coriaceous, the cystoliths obscure *M. laevigata*.

Myriocarpa laevigata Killip, Journ. Wash. Acad. Sci. 15: 55. 1925.

A compact tree or shrub, up to 5 meters high, essentially glabrous throughout; leaves obovate, rarely ovate, 7-14 cm. long, 4-8 cm. wide, abruptly acuminate or acute, shallowly undulate-serrulate above the middle, coriaceous, the cystoliths obscure; plants dioecious or some-

times monoecious, the spikes unisexual, once or twice forked near the base, 6–15 cm. long; staminate flowers sessile in contiguous clusters; achenes ovate-elliptic, setose at the margin, stipitate.

Huánuco: Muña, 2,300 meters, 3925 (type). Yanano, 1,800 meters, 3783. Río Posuso, 1,900–2,000 meters, Weberbauer 6735, 6743.—Junín: Huacapistana, 1,800 meters, Killip & Smith 24186.

Myriocarpa stipitata Benth. Bot. Voy. Sulph. 168. pl. 55. 1844. *M. densiflora* Benth. op. cit. 169. *M. Dombeyana* Wedd. Ann. Sci. Nat. III. 18: 232. 1852. *M. densiflora* var. *Dombeyana* Wedd. Arch. Mus. Paris 9: 487. 1856–57.

A tree 3–9 meters high, with a slender trunk, the branchlets usually hirsute-tomentose; leaves broadly ovate to ovate-oblong, 10–25 cm. long, 6–12 cm. wide, acuminate, rounded or cordate at the base, crenate to crenate-serrulate, rugulose with age, bearing on the upper surface conspicuous cystoliths which radiate from the center of the areoles, membranous, essentially glabrous above, sparingly pilosulous to densely tomentose beneath; spikes 1–3 times forked near the base, the staminate shorter than the leaves, the pistillate often much longer, up to 30 cm. long; achenes elliptic, 1–1.5 mm. long, subsessile or usually stipitate, generally setose at the margin.

Piura: Prov. Huancabamba, 1,300 meters, Weberbauer 6014.—San Martín: Tarapoto, 750 meters, Spruce 4286; Ule 6507; Williams 6145. Pongo de Cainarachi, 230 meters, Klug 2748. Zepelacio, Klug 3536.—Loreto: Balsapuerto, 220 meters, Klug 2898. Pongo de Manseriche, Mezia 6252. Río Nanay, Williams 414. Cuschi, 1,600 meters, 4838. Pampayacu, Sawada 16.—Junín: Huasa-huasi, Dombey (type of *M. Dombeyana*). Carpapata, 2,700 meters, Killip & Smith 24374. Huacapistana, 2,000 meters, Killip & Smith 24139. La Merced, 600 meters, 5454; Killip & Smith 23475, 24059, 24064, 24075, 24077, 25386. Dos de Mayo, Pichis Trail, Killip & Smith 25837, 25856.—Ayacucho: Carrapa, 1,000 meters, Killip & Smith 22467, 22487. Aina, 900 meters, Killip & Smith 22687. Estrella, 500 meters, Killip & Smith 23073. Kimpitiriki, 400 meters, Killip & Smith 22952.—Cuzco: Urubamba Valley, 1,800 meters, Cook & Gilbert 937, 1047, 1147.—Without locality: Mathews 2040 (type of *M. densiflora*). Colombia to Venezuela and Ecuador. "Ishanga" (Tarapoto), "tigre-tigre" (Cuzco).

M. densiflora was differentiated from *M. stipitata* on the basis of the leaves being softly tomentose beneath and the achenes sub-

sessile rather than stipitate, and the two species have always been considered distinct. The large number of specimens now available fail to show a correlation of these or any other characters; the degree of indument is highly variable and, even in a single spike, there is variation in the relative length of the stipe to the body of the achene.

6. URERA Gaud.

Trees or shrubs, usually with stinging hairs; leaves alternate, stipulate, petiolate, the cystoliths punctiform, linear, or wanting; plants usually dioecious, the flowers small, in axillary, dichotomous or irregularly branched cymes, the staminate with a 4–5-parted perianth and 4–5 stamens, the pistillate with 4 equal or unequal segments; stigma penicillate persistent; achene straight or oblique, at least partially surrounded by the fleshy, enlarged perianth.

Leaves incised-lobed usually more than halfway to the midnerve.

U. laciniata.

Leaves not lobed, dentate, crenate, or subentire.

Achenes more than 2 mm. long; leaves coarsely dentate or sinuate-dentate. *U. baccifera*.

Achenes less than 2 mm. long; leaves crenate-dentate.

U. caracasana.

Urera baccifera (L.) Gaud. in Freyc. Voy. Uran. Bot. 497. 1826. *Urtica baccifera* L. Sp. Pl. ed. 2. 1398. 1763.

A coarse, erect, subligneous herb, or a shrub, 1–4 meters high, the stem densely covered with short, stout, stinging prickles; leaves broadly ovate or round-ovate to oblong-ovate, up to 35 cm. long and 15 cm. wide, rounded or cordate at the base, coarsely dentate or irregularly sinuate-dentate, glabrescent, rarely densely pubescent, or with hairs or prickles, especially on the nerves; plants dioecious, the flowers in much branched cymes; fruit succulent, white or rose-colored, 3–5 mm. long.

San Martín: Chazuta, 260 meters, Klug 4029.—Loreto: Río Marañón Valley, 150 meters, Killip, Smith & Dennis 29169. Río Itaya, 110 meters, Killip & Smith 29376, 29465, 29579; Williams 3423. Mishuyacu, 100 meters, Klug 1085. Lower Río Huallaga, Williams 4350.—Huánuco: Muña, 2,200 meters, 3910. Monzón, Weberbauer 3497, 3498.—Junín: Pichis Trail, Killip & Smith 25904, 26105, 26356.—Ayacucho: Aina, 900 meters, Killip & Smith 22794.—Madre de Dios: Seringal, Ule 9330. Widely distributed in tropical America.

Urera caracasana (Jacq.) Gaud. ex Griseb. Fl. Brit. W. Ind. 154. 1859. *Urtica caracasana* Jacq. Hort. Schoenbr. 3: 71. pl. 396. 1798. *Urera Jacquinii* Wedd. Ann. Sci. Nat. III. 18: 200. 1852. *U. subpeltata* Miq. in Mart. Fl. Bras. 4, pt. 1: 189. pl. 66. 1853. *U. acuminata* Miq. op. cit. 190, not Gaud. *U. Jacquinii* var. *subpeltata* Wedd. Arch. Mus. Paris 9: 145. 1856-57. *U. Jacquinii* var. *Miqueli* Wedd. loc. cit. *U. caracasana* var. *subpeltata* Wedd. in DC. Prodr. 16, pt. 1: 90. 1869. *U. caracasana* var. *Miqueli* Wedd. loc. cit. *U. capitata* var. *Pavonii* Wedd. op. cit. 92.

A shrub 1-6 meters high, with elongate branches, the young twigs, petioles, inflorescence, and leaf veins usually armed with stinging hairs; leaves broadly ovate or sometimes ovate-lanceolate, variable in size, up to 30 cm. long and 25 cm. wide, acuminate, cordate at the base, usually with an open sinus but sometimes with a closed sinus and overlapping basal lobes, crenate-dentate, scabrous above, more or less pubescent beneath; plants dioecious, the cymes regularly dichotomous, shorter than the petioles or often much longer, the staminate flowers sessile in distinct, compact glomerules, the pistillate flowers usually ternate, sometimes single or in dense clusters, pedicellate or subsessile.

San Martín: Zepelacio, Klug 3554. Tarapoto, Spruce 4305.—Loreto: Lower Río Huallaga, Williams 4288, 4308, 4796, 4945. Iquitos, Tessmann 3584; Williams 8041. Río Marañón, Killip & Smith 27518, 29230; Tessmann 3857, 4118. Pumayacu, Klug 3174. Mishuyacu, Klug 441, 1071. Río Putumayo, Klug 1639. Río Napo, Meria 6469. Río Amazonas, Williams 1861, 2005, 2673, 2789. Río Nanay, Williams 490, 505, 802, 1256. Cerro de Escalera, Ule 45 in part. Yarina-cocha, Tessmann 3198.—Huánuco: Casapí, Mathews 2030. Monzón, Weberbauer 3704.—Junín: La Merced, Killip & Smith 23929. Río Perené, Killip & Smith 25151.—Ayacucho: Kimpitiriki, Killip & Smith 22935.—Madre de Dios: Seringal, Ule 9332.—Dept. uncertain: Pampa del Sacramento, Castelnau.—Without locality: Ruiz & Pavón (type of *U. capitata* var. *Pavonii*); Gay; Poeppig; Fox 32. Widely distributed in tropical America. "Ishanga," "ishangu del agua."

Urera caracasana is here interpreted in its widest sense. Many of the specimens from northern Peru cited above have proportionately narrower leaves than in the typical form and represent the variety *subpeltata*. If further study proves that *U. capitata*, with the pistillate flowers sessile in dense heads, is specifically distinct from *U. caracasana*, some of this material, including the type of *U.*

capitata var. *Pavonii*, should be placed in that species. At present it seems best to treat these as representing a young stage of *U. caracasana*.

Urera laciniata (Goudot) Wedd. Ann. Sci. Nat. III. 18: 203. 1852. *Urtica laciniata* Goudot ex Wedd. loc. cit., as synonym.

An erect, tree-like herb or often truly arborescent, 1-4 meters high, the branches densely covered with stout bristles or spines; leaves 15-35 cm. long and wide, deeply incised-lobed (lobes acuminate, entire or few-toothed), membranous, spiny on the nerves beneath, glabrescent; plants dioecious, the cymes up to 20 cm. long, the staminate flowers in glomerules, the pistillate in glomerules or distinct; achenes suborbicular, nearly 2 mm. long.

San Martín: Tarapoto, Spruce 4140. Alto Río Huallaga, Williams 6799. San Roque, 1,350-1,500 meters, Williams 7785.—Loreto: Mishuyacu, 100 meters, Klug 1079. Río Nanay, Williams 451. Yurimaguas, 200 meters, Williams 4937. Río Ucayali, Tessmann 3177.—Huánuco: Posuso, 600 meters, 4703.—Junín: La Merced, 600 meters, 5315. Puerto Yessup, 400 meters, Killip & Smith 26319.—Ayacucho: Estrella, 500 meters, Killip & Smith 22645.—Without locality: Haenke 1730; Ruiz & Pavón. Costa Rica to Venezuela, Peru, and Bolivia. "Ishanga."

7. POUZOLZIA Gaud.

Low shrubs, rarely woody vines; leaves alternate, entire, toothed in only a few American species, petiolate, 3-nerved, the upper surface densely covered with punctiform cystoliths; plants monoecious, rarely dioecious, the flowers in small, axillary clusters or in leafless spikes; staminate perianth 4-5-parted or lobed, the stamens 3-5; pistillate perianth tubular, 2-4-toothed, usually costate, the ovary included, the stigma filiform, at length deciduous, the achenes crustaceous, shiny.

Leaves entire.

Flower clusters in leafless spikes; plants scandent, dioecious, glabrescent..... *P. formicaria*.

Flower clusters in the leaf axils; plants monoecious, densely pubescent.

Under surface of the leaves hirtellous on the nerves, compactly white-lanate between the nerves..... *P. Poeppigiana*.

Under surface of leaves densely brown-hirsute..... *P. obliqua*.

Leaves coarsely crenate-serrate..... *P. longipes*.

Pouzolzia formicaria (Poepp.) Wedd. Arch. Mus. Paris 9: 407. 1856-57. *Boehmeria formicaria* Poepp. ex Wedd. Ann. Sci. Nat. IV. 1: 201. 1854.

A woody vine or a scandent shrub; leaves oblong-lanceolate, 4-12 cm. long, 2-6 cm. wide, acuminate, rounded or cordulate at the base, entire, subcoriaceous, concolorous, scabrid above, essentially glabrous; plants dioecious, the flower clusters borne in spikes 8-15 cm. long; pistillate perianth about 2 mm. long, hispidulous; achenes conical, about 1.5 mm. long, brownish white, the style about 3 times longer, densely pubescent.

Loreto: Mainas, *Poeppig* 2287 (type). Río Paranapura, 200 meters, *Klug* 3944. Rancho Indiana, 110 meters, *Mexia* 6411. Mishuyacu, 100 meters, *Klug* 930. Iquitos, 120 meters, *Williams* 8117; *Tessmann* 3585, 3897, 3898. Río Ucayali, *Tessmann* 3336. Lower Río Nanay, *Williams* 557. Florida, Río Putumayo, 200 meters, *Klug* 1998, 2030, 2354.

Pouzolzia longipes Killip, sp. nov. *P. procridioides* var. *hirsuta* Wedd. in DC. Prodr. 16, pt. 1: 231. 1869(?).

Herba monoica; folia late ovata, acuminata, grosse crenato-serrata, supra setulosa, subtus in nervis puberula; glomeruli axillares, androgyni vel unisexuales, perianthio masc. 4-lobato; achaenia conica.

An herb 60-75 cm. high, woody below, the stem sparingly pilulous, at length glabrous, angulate; leaves broadly ovate, 5-10 cm. long, 3-6 cm. wide, acuminate, rounded and abruptly narrowed at the base, coarsely crenate-serrate, membranous, sparingly setulose above, puberulent on the nerves beneath, otherwise glabrous, the petioles 2-5 cm. long; plants monoecious, the flower clusters axillary, 5-8 mm. wide, androgynous or unisexual; staminate perianth about 2.5 mm. long, deeply 4-lobed; pistillate perianth 1-1.5 mm. long, scaberulous; achenes conical, nearly 1 mm. long, light brown, the styles 3 mm. long, pubescent.

Junín: Eneñas, Pichis Trail, 1,700-1,900 meters, dense forest, July 2, 1929, *Killip & Smith* 25753 (type, U. S. Nat. Herb. No. 1,359,857; Field Mus. No. 632,801).

This species, one of the few American ones with toothed leaves, is nearest the African *P. procridioides* (E. Mey.) Wedd., and agrees well with the Bonpland specimen at Paris, labeled merely "Amer. Trop.," which Weddell referred to *P. procridioides*. In addition to the improbability of the African species occurring in Peru, there are

slight differences in the tothing of the leaves, the indument, and the size of the achenes which suggest that another species is represented.

The type of *P. procridioides* var. *hirsuta*, a Pavón specimen in the Boissier Herbarium, not examined in connection with the present studies, may be *P. longipes*, though the description of the indument does not well apply to the specimen cited above.

Pouzolzia obliqua (Poepp.) Wedd. Arch. Mus. Paris 9: 405. 1856-57. *Margarocarpus obliquus* Wedd. Ann. Sci. Nat. IV. 1: 204. 1854. *Boehmeria obliqua* Poepp. ex Wedd. loc. cit., as synonym.

A shrub or a small tree, 2-5 meters high, densely hirsute nearly throughout; leaves oblong or oblong-lanceolate, 2-14 cm. long, 1-5 cm. wide, attenuate-acuminate, rounded or cordulate at the base, oblique, short-petioled, hispid above; plants monoecious or dioecious, the flower clusters axillary, androgynous or unisexual; achenes light brown or white, the styles 8-10 mm. long.

San Martín: Juanjui, *Klug* 4169.—Loreto: Mainas, *Poeppig* 2032 (type). Guatemala to Venezuela and Peru, evidently uncommon in Peru.

Pouzolzia Poeppigiana (Wedd.) Killip, Journ. Wash. Acad. Sci. 21: 347. 1931. *Margarocarpus Poeppigianus* Wedd. Ann. Sci. Nat. IV. 1: 204. 1854. *M. asper* Wedd. loc. cit. *Boehmeria discolor* Poepp. ex Blume, Mus. Bot. Lugd. Bat. 2: 206. 1856. *B. aspera* Blume, loc. cit., footnote, not Wedd. *Pouzolzia discolor* Wedd. Arch. Mus. Paris 9: 408. pl. 13B, f. 18-24. 1856-57. *P. aspera* Wedd. in DC. Prodr. 16, pt. 1: 233. 1869, not Wight.

A shrub 1-5 meters high, with elongate, villous branches; leaves lanceolate or oblong-lanceolate, 2-15 cm. long, 1-4.5 cm. wide, acuminate, rounded at the base, symmetrical or nearly so, entire, above scabrous and hirsutulous, beneath rufo-hirtellous on the nerves and compactly white-lanate between them; plants monoecious, the flower clusters axillary, androgynous or unisexual, the styles up to 1.5 cm. long, the achenes light brown or white, about 1 mm. long.

San Martín: Lamas, 840 meters, *Williams* 6442; *Spruce*. Alto Río Huallaga, *Williams* 6683. Zepelacio, 1,400 meters, *Klug* 3437.—Loreto: Río Amazonas, *Poeppig* 3044.—Huánuco: Río Huallaga Canyon, 1,200 meters, 4328.—Junín: La Merced, 700 meters, *Killip & Smith* 23386, 23528, 23586, 23938. Colonia Perené, *Killip & Smith* 25024.—Ayacucho: Carrapa, 1,000 meters, *Killip & Smith* 22471.—Cuzco: Bues in 1930.—Without locality: "Peru subandina,"

Poeppig 1284 (type; also type of *P. discolor*); Ruiz & Pavón; Gay; Mathews 2036, 2037. Also in Bolivia.

8. FLEURYA Gaud.

Annual herbs, usually with stinging hairs; leaves alternate, petiolate, toothed, trinerved; plants monoecious or dioecious, the flowers in clusters in large panicles, the staminate 4-5-parted, the pistillate with 4 imbricate perianth segments, the stigma papillose, at length hooked; achenes oblique, compressed.

Fleurya aestuans (L.) Gaud. in Freyc. Voy. Uran. Bot. 497. 1826. *Urtica aestuans* L. Sp. Pl. ed. 2. 1397. 1762. *F. glandulosa* Wedd. Ann. Sci. Nat. III. 18: 205. 1852. *F. aestuans* var. *glandulosa* Wedd. Arch. Mus. Paris 9: 112. 1856-57. *F. aestuans* var. *racemosa* Wedd. in DC. Prodr. 16, pt. 1: 72. 1869.

An erect, simple or few-branched herb, up to 1.2 meters high, the stem sometimes glandular; leaves broadly ovate, 7-17 cm. long, 2.5-12 cm. wide, acute or acuminate, coarsely and sharply dentate, slender-petioled, membranous, usually with a few stinging hairs on the upper surface; panicles usually androgynous; achenes 1-1.5 mm. long.

Loreto: Fortaleza, Williams 4462. Puerto Arturo, 135 meters, Killip & Smith 27755; Williams 5130, 5195. Iquitos, 100 meters, Killip & Smith 27074; Williams 1340, 1348, 8099, 8193. Lower Río Nanay, Williams 353. La Victoria, Williams 2603. Nauta, Raimondi 2173.—Without locality: Poeppig 2086; Ruiz & Pavón. Throughout tropical America.

9. PARIETARIA L.

Diffuse or tufted, slender herbs, without stinging hairs; leaves alternate, entire, trinerved; flowers in small, axillary glomerules, the staminate, pistillate, and perfect intermixed; perianth tubular, 4-parted; achenes straight, ovoid, lustrous.

Parietaria debilis Forst. Fl. Ins. Austr. Prodr. 73. 1786. *P. debilis* var. *ceratosantha* Wedd. Arch. Mus. Paris 9: 515. 1856-57.

An erect or diffuse, pilosulous or glabrescent, annual herb; leaves ovate, rhombic-ovate, or orbicular-ovate, 5-20 mm. long, obtuse or rounded at the apex; clusters few-flowered.

Cajamarca: Cascas, Raimondi 8174. Tambillo, Raimondi 7995.—Lima: Matucana, 2,500 meters, 262. Lima, 5870; Rose 18581. Lurin, 5968. Atocongo, Pennell 14795.—Arequipa: Mollendo,

Hitchcock 22391, 22410; Johnston 3552. Tiabaya, 2,000 meters, Pennell 13072. Arequipa, 2,600 meters Pennell 13194.—Locality uncertain: Dombey; Weddell. Widely distributed in the warmer parts of the world.

50. PROTEACEAE. Protea Family

Besides the following genera of this family, which is best represented in Australia, the silk-oak of Australia, *Grevillea robusta* Cunn., is doubtless cultivated, as in all warm regions, for shade. It may be known by its fern-like leaves, silky-pubescent beneath.

Flowers showy, conspicuous above the leaves; hypogynous glands large, or the disk entire or obscurely 3-lobed... 1. *Embothrium*.

Flowers rather small, often inconspicuous; hypogynous glands or scales 3-4 or the disk 4-lobed.

Inflorescence axillary, at least in part, 1-5 cm. long; hypogynous glands 3; style laterally expanded..... 2. *Lomatia*.

Inflorescence usually terminal, often longer than the leaves; hypogynous scales or glands 4.

Leaves conspicuously net-veined; fruit tardily dehiscent.

Leaves entire..... 3. *Panopsis*.

Leaves pinnate..... 4. *Euplassa*.

Leaves inconspicuously net-veined; fruit early dehiscent.

5. *Roupala*.

1. EMBOTHRIUM Forst.

Oreocallis R. Br. Trans. Linn. Soc. 10: 196. 1811.

Tall shrubs with long, willow-like branches, the ultimate terminated by dense racemes of showy, strap-shaped, 1-petaled flowers. Style oblong-fusiform or oblique at the tip.—The herbarium name *Catas* Dombey is mentioned in synonymy by Lamarck, Encycl. 2: 355. 1786.

Inflorescence more or less reddish-pubescent..... *E. grandiflorum*.

Inflorescence glabrous, often pruinose-glaucous.

Leaves mostly 3-3.5 cm. wide, rarely 10 cm. long.

E. mucronatum.

Leaves mostly 4-5 cm. wide, usually 10-15 cm. long.

E. Weberbaueri.

Embothrium grandiflorum Lam. Encycl. 2: 354. 1786. *E. emarginatum* R. & P. Fl. 1: 62. pl. 95. 1798. *Oreocallis grandiflora* R. Br. Trans. Linn. Soc. 10: 197. 1811.